INTERNATIONAL JOURNAL OF TRANSGENDER HEALTH
2022, VOL. 23, NOS. 1–2, 194–213
https://doi.org/10.1080/26895269.2020.1777615

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PERSPECTIVES ON HEALING

Growth from adversity in trans and gender diverse people of color

Lee N. Taube and Alexander J. Mussap

School of Psychology, Deakin University, Melbourne, VIC, Australia

ABSTRACT

Background: Trans-negativity and gender-based discrimination negatively impact on the wellbeing and mental health in transgender (trans) and gender diverse people (TGD). There is limited research on TGD people thriving under adversity, and no research to date has considered TGD people of color in this context.

Method: We used the Post-Traumatic Growth Inventory (PTGI-X) to survey 125 TGD people of color and 625 white TGD adults (18 to 68 years old, M = 26.0, SD = 9.2) about their experiences of growth from adversity. Confirmatory factor analysis (CFA), using sub-sampling to compensate for our unequal sample sizes, supported a five-factor structure of the PTGI-X consisting of growth in relating to others, finding new possibilities, personal strength, greater appreciation of life, and spiritual/existential change. Measurement invariance tests confirmed configural, metric, and scalar invariance of this structure across the two TGD subgroups.

Results: A MANOVA revealed that growth from adversity in TGD participants was generally greater than that reported by people who have recently been exposed to a traumatic event. T-tests revealed that TGD people of color experienced more growth in terms of relating to others and more personal strength than white TGD participants. Subsequent hierarchical regressions revealed that race moderated associations between PTGI-X scores and personal well-being, with TGD people of color reporting more benefits (more well-being) at high levels of growth but also more deficits (less well-being) at low levels of growth than the white TGD subgroup.

Conclusion: The results support the use of the PTGI-X with TGD populations and across racial TGD subgroups and indicate that growth from adversity is not only prevalent in TGD people but also relevant to positive outcomes, particularly in TGD people of color.

KEYWORDS

Gender diversity; growth from adversity; intersectionality; race; transgender; transgender people of color

Adversity and growth in trans and gender diverse people

Transgender (trans) or gender diverse (TGD) people experience substantial socioeconomic, physical health, and mental health difficulties in response to the challenges they face (Kattari et al., 2015). Structural cis-normativity is the pervasive assumption that all people are cis-gender, and this can lead to the exclusion and isolation of TGD people, limiting their opportunities in society and access to health services, education and training (Bauer et al., 2009; Grant et al., 2011; Jefferson et al., 2013; Lefevor et al., 2019). Trans-negativity, in which non-cis-gender expressions of identity are actively suppressed, denied, or devalued by society (Smith et al., 2014), can lead to avoidance of social situations, hypervigilance, and traumatic levels of stress (Burnes & Chen, 2012; Mizock & Lundquist, 2016; Reisner et al., 2016). Internalized transphobia, in which a TGD person accepts some of society's cis-normative values, can lead to shame, guilt, and discomfort in relation to their gender identity (Hendricks & Testa, 2012).

Many TGD people exhibit resilience in the face of these challenges, suggesting that protective factors exist (Bockting et al., 2013; Hatchel & Marx, 2018). Studies have identified a range of intra-and interpersonal resources that appear to help TGD people cope with trans-negativity and gender-based discrimination, including having personal strength, a positive gender identity, and access to a supportive trans community (Bry

CONTACT Alexander J. Mussap mussap@deakin.edu.au School of Psychology, Deakin University, 221 Burwood Highway, Melbourne, VIC 3125, Australia

et al., 2018). Many TGD people also appear to have benefited in important ways both personally and interpersonally from the challenges they have faced and survived (Riggle et al., 2011; Russell & Richards, 2003).

The phenomenon of growth from adversity has been confirmed in numerous cis-gender populations following a challenging event or experience (Tedeschi & Calhoun, 2004; Tedeschi et al., 2017), including violence and military conflict (Glad et al., 2019; Habib et al., 2018), illness and injury (Dong et al., 2015; Kamen et al., 2016; Merecz et al., 2012), bereavement (Albuquerque et al., 2018), surviving a natural disaster (Zeligman et al., 2019), even experiencing a negative event vicariously through a family member, friend, or client (Bartoskova, 2017; Ragger et al., 2019; Wu et al., 2019). It has been argued that growth following adversity can take various forms including increased personal strength, an improved ability to relate to others, a better appreciation of life, an ability to see new possibilities, and spiritual/existential growth (Tedeschi et al., 2017; Tedeschi & Calhoun, 2004). These forms of growth are thought to occur when a negative event or experience is sufficiently challenging that it forces an individual to reflect on, question, and reevaluate their core beliefs about the world and their place within it (Cann et al., 2010; Tedeschi & Calhoun, 2004). This process is thought to add value to their life and lead to improvements in psychosocial functioning beyond that prior to the event (Martínez-Martí & Ruch, 2017; Park et al., 2004; Scandurra et al., 2017). Similar processes are thought to explain growth following adversity for TGD people. Although there is limited research, it has been suggested that the unique experiences and challenges that TGD people face can give them valuable insights, greater self awareness, motivation and opportunity to develop new support networks, and generally serve as the impetus for positive change (Maguen et al., 2007; Riggle & Rostosky, 2012).

Measures of growth from adversity are typically subjective, self-report, and focus on events (both the adverse event and the ensuing growth) that occurred in the past. This makes it important to ensure that these measures possess adequate construct validity (e.g., Blix et al., 2016; Davis et al., 1998; Engelhard et al., 2015). The primary approach used to evaluate construct validity has been to validate growth measures against positive outcomes indicative of psychosocial adaptation (Helgeson et al., 2006; Hill & Watkins, 2017; LaRocca et al., 2018; Sawyer et al., 2010; Schneider et al., 2019; Veronese et al., 2017; Wang et al., 2017). This was the approach we adopted in the present study, in which we compared measures of growth obtained from participants with measures of psychological well-being and mental health.

Intersectionality in the context of gender diverse identities

Concerns have been raised about the tendency to investigate and theorize about TGD people as a homogenous group (Hines, 2006). Doing so ignores diversity within TGD people, risks further pathologisation, and can lead to over-generalisationsin the provision of health services (Budge et al., 2016; Sánchez & Vilain, 2009).

Intersectionality theory recognizes that each person possesses multiple identities, some of which may be privileged while others marginalized, and that these identities can interact to create a complex and idiosyncratic social context for that individual (Else-Quest & Hyde, 2016). Intersectionality theory was originally developed in the context of gender studies, to uncover gender discrimination experienced by women from racial, class, and sexual minorities (Collins & Bilge, 2019; Crenshaw, 2005). However, the concept of intersectionality can be applied to people possessing other multiple minority statuses such as TGD people of color experiencing both transphobia and racism concurrently. In the present study, we argue that considering oppression in isolation, as separate and independent sources of stress, not only risks oversimplifying and underestimating the challenges faced by people with multiple minority identities (Burnes & Chen, 2012; Cole, 2009) but also risks oversimplifying and underestimating the benefits that may accrue.

Intersectionalities involving gender diversity and race have only recently begun to receive

empirical attention (Moradi et al., 2016; Roen, 2001). Evidence strongly suggests that gender nonconforming people who hold multiple minority statuses, particularly "visible" ones such as race, experience a compounding of adversity both in terms of frequency and severity. For example, TGD people of color are more likely than their white TGD peers to suffer discrimination, harassment, victimization, interpersonal violence (Garofalo et al., 2006; James et al., 2015; Singh, 2013). TGD people of color are more likely to encounter barriers and obtain less support from family when attempting to access health services, employment, and housing (Chang & Singh, 2016; Grant et al., 2011; Kattari et al., 2015; Lefevor et al., 2019; Saffin, 2011). TGD people of color are more likely to experience discrimination and violence from police (NCAVP, 2016). Presumably as a consequence of this additional adversity, TGD people of color are more likely than their white TGD peers to experience depression, anxiety, and stress (Bazargan & Galvan, 2012; Budge et al., 2016; Jefferson et al., 2013; Lefevor et al., 2019; Seelman et al., 2017; Sun et al., 2016).

However, there is also emerging evidence that people who have multiple minority identities can grow from their experiences of adversity (Hatchel & Marx, 2018). When interviewed about this growth, TGD people of color emphasize the importance of both the gender and racial components of their identity, citing pride and public affirmation of identity along with community connectedness (Hatchel & Marx, 2018; Purdie-Vaughns & Eibach, 2008; Singh, 2013; Singh & McKleroy, 2011). Findings of this sort have encouraged the development of positive strengths-focused practice that recognizes the distinctive needs and challenges, but also strengths of TGD people with intersecting identities (e.g., Chang & Singh, 2016).

Aims and hypotheses

Our review of literature revealed growing empirical interest in the positive aspects of gender nonconformity and the benefits of surviving and thriving under adversity. However, the body of relevant literature is still very limited, not only in terms of TGD people, but particularly in terms of intersecting identities that combine gender and race. In addition, the limited research with TGD people of color was primarily qualitative rather than quantitative. Our review also highlighted the need to compare self-reported growth against relevant and measurable psychosocial outcomes such as personal wellbeing and mental health.

In the present study, we administered a measure of growth from adversity — the Post-Traumatic Growth Inventory (PTGI-X; Tedeschi et al., 2017), to adults who identify as TGD. The PTGI-X has previously been evaluated for use across various cultural groups and on cis-gender people who have experienced a variety of different forms of adversity, but never before on TGD people. We also included measures of personal well-being (life satisfaction) and negative mood (depression, anxiety, and stress) in order to examine the extent to which growth from adversity in TGD people predicts meaningful outcomes. Importantly, both of these measures have previously been evaluated successfully on TGD samples (Davey et al., 2014; Ho & Mussap, 2017).

Studying intersecting minority identities is inherently complex. On the one hand, considering individual oppressions in isolation is likely to be inadequate; on the other hand, it is not possible to know in advance if and how multiple forms of oppression might interact. For this reason it is been recommended that researchers analyze the influence of individual oppressions separately as well as in combination (Shields, 2008). Therefore, in the present study we examined levels of growth from adversity experienced by TGD people, compared levels of growth between TGD people of color and white TGD subgroups, and examined the extent to which intersecting gender and racial identities shape the way in which growth leads to meaningful outcomes.

Our first aim was to confirm if growth from adversity in relation to being a member of a gender nonconforming minority is comparable to (and thus presumably similar to) that experienced by non-minority people who have experienced trauma.

> H1: It was hypothesised that levels of growth from adversity reported by TGD participants will be comparable to that reported by populations who have

recently been exposed to a potentially traumatic event.

Our second aim was to determine whether TGD people of color are subjected to a compounding of oppression and, if so, whether they are also more likely to experience growth.

H2: It was hypothesised that TGD people of color will report poorer well-being and more mood difficulties than white TGD respondents.

H3: It was hypothesised that TGD people of color will report greater self-perceived growth than white TGD respondents.

Our third aim was to determine whether growth from adversity is more important for achieving positive outcomes (improving well-being and reducing negative mood) in TGD people of color compared to white TGD people. This served the purpose of evaluating, for both subgroups, the extent to which growth is functional. It was also important in terms of differentiating between three different ways in which a holding multiple intersecting identities could moderate the effects of growth on outcome measures: (i) A crossed interaction effect in which both the beneficial effects of growth on positive outcomes and the detrimental effects of an absence of growth on positive outcomes are amplified in TGD people of color compared to white TGD people; (ii) an uncrossed interaction effect in which only the beneficial consequences of growth are additionally beneficial for TGD people of color; or (iii) an uncrossed interaction effect in which only the detrimental effects of an absence of growth are amplified in TGD people of color compared to white TGD people.

H4: It was hypothesised that self-perceived growth in TGD respondents will be positively related with well-being and negatively related with negative mood.

H5: It was hypothesized that relationships between self-reported growth and outcome measures – personal wellbeing and negative mood (H4) – will be stronger for TGD people of color compared to white TGD respondents. The exact nature of this interaction effect will be revealed by the shape of the moderation effect obtained.

Because research has seldom considered intersectional oppression and growth in TGD contexts, the measures of growth available to us had not been formally assessed for use with TGD respondents nor across racial subgroups of TGD respondents (Shulman et al., 2017). Therefore, in order to use the PTGI-X to compare growth in TGD subgroups we first needed to confirm the five-factor structure of the measure on our participants (Tedeschi et al., 2017), and then establish its measurement invariance across the TGD people of color and white TGD subgroups.

Method

Participants

Participants were 750 adults ranging in age from 18 to 68 years old (M = 26.0, SD = 9.2) who identify as TGD. Although gender identity is best understood as existing along multiple continuous dimensions (Ho & Mussap, 2019), for the purposes of describing the gender diversity of our sample we categorized them into three subgroups: Assigned female at birth who identify primarily as a man or male (transmen; N = 256, 41.0%), assigned male at birth who identify primarily as a woman or female (transwomen; N = 116, 18.7%), or not identifying with any gender or whose gender identity is outside the female/male binary (nonbinary; N = 253, 40.2%). Demographics of the sample are summarized in Table 1.

We did not have a sample of sufficient size to allow for a fine-grained categorization and analysis of specific ethnic subgroups, and had we attempted to do so we would have encountered problems with the lack of agreed-upon definitions pertaining to ethnic categories as well as the "invisibility" of many ethnicities (Helms et al., 2005). Instead, we classified participants in terms of whether they were a racial minority subject to discrimination and disadvantage by a white population. Our approach recognized the importance of considering an individual's cultural context when evaluating their ethnicity, particularly when they belong to an ethnic minority group residing within mainstream society (Berry, 2017). The idea is that the stress such an individual experiences in relation to their minority ethnic status could exacerbate the stress they

Table 1. Participant demographics ($N = 625$, and $N = 125$).

		White	People of color	Test of independence by ethnicity
N		625	125	
Gender	Transman	256 (41.0%)	57 (45.6%)	χ^2 (df = 2) = 3.98, $p = .14$ ns
group	Transwoman	116 (18.7%)	14 (11.2%)	
	Gender nonbinary	253 (40.5%)	54 (43.2%)	
Ethnicity	White	625 (100%)		
	Asian		37 (29.6%)	
	Latinx/Hispanic		34 (27.2%)	
	Indigenous		20 (16%)	
	Multiracial		20 (16%)	
	Black		11 (8.8%)	
	Middle East/Arab		3 (2.4%)	
Residence	Australia	249 (39.8%)	37 (29.6%)	
	USA	224 (35.8%)	62 (49.6%)	
	UK	51 (8.2%)	7 (5.6%)	
	Canada	46 (7.4%)	12 (9.6%)	
	France	17 (2.7%)	2 (1.6%)	
	Germany	11 (1.8%)		
	Finland	5 (0.8%)		
	Netherlands	3 (0.5%)		
	NZ	2 (0.3%)	1 (0.8%)	
	Denmark	3 (0.5%)	1 (0.8%)	
	Ireland	1 (0.2%)		
	Poland	2 (0.3%)	2 (1.6%)	
	Spain	2 (0.3%)		
	Austria	2 (0.3%)		
	Italy	2 (0.3%)		
	Norway	2 (0.3%)		
	Russia	1 (0.2%)		
	Belgium	1 (0.2%)		
	Latvia	1 (0.2%)		
	Sweden		1 (0.8%)	
Coming out	… to parents	435 (72.5%)	84 (67.5%)	χ^2 (df = 2) = 1.87, $p = .39$ ns
	… to siblings	406 (65.0%)	78 (62.4%)	χ^2 (df = 2) = 2.64, $p = .27$ ns
	… to close friends	589 (94.2%)	112 (89.6%)	χ^2 (df = 2) = 4.38, $p = .08$ ns
	… to colleagues	257 (41.1%)	50 (40.0%)	χ^2 (df = 2) = .07, $p = .97$ ns
Income	<$10,000	80 (13.1%)	24 (19.8%)	χ^2 (df = 2) = 10.66, $p < .05$
	$10–50,000	292 (47.9%)	39 (32.2%)	
	$51–100,000	212 (34.8%)	52 (43.0%)	
	>$100,000	26 (4.3%)	6 (5.0%)	

Notes: Income is in local currency. Chi square tests of independence are provided for gender, coming-out status, and income as a function group (POC v white).

experience due to their minority gender or sexual status (Scandurra et al., 2017). For this reason, an evaluation of ethnicity in relation to mainstream culture is recommended when researching discrimination in the context of ethnicity-gender or ethnicity-sexuality intersectionalities (Parent et al., 2013). Participants were thus classified as a person of color or white based on their responses to two questions, one about their ethnicity, the other about their current country of residence. Six hundred and twenty-five participants were classified as "white" because they identified as white and currently reside in a white-majority country and 125 were classified as people of color because they identified as other than white.

The list of white-majority countries of residence is included in Table 1. Our focus on minority/majority status also meant that 20 indigenous respondents living in white-majority Western countries were also classified as a people of color. We also included as people of color 20 respondents who identified as multiracial if at least one of their identified races was nonwhite.

Not included in the sample were 15 white and 5 nonwhite participants currently residing in nonwhite-majority countries. Also not included were 19 respondents who did not respond to the question about ethnicity and a further 12 who did not respond to the question about their country of residence. We also did not include nine Jewish respondents due to insufficient information in response regarding race. Research on this ethnic group shows that a majority find it difficult to apply the white/people of color binary to themselves, with many reporting that they experience "white privilege" (Blumenfeld, 2006). For example, four of the nine Jewish respondents in or study explicitly referred to themselves as

white. Categorizing these participants as people of color would have been inappropriate.[1]

To carry out model comparison tests (see Results) a subsampling method was employed that required capping the white TGD sample to 625 respondents—a multiple of the number of respondents who were people of color. To do this, we exclude a randomly chosen set of 16 white respondents (from an original number of 641 valid responses). These "surplus" 16 white respondents were held in reserve in the event that any of the final 625 white cases had to be discarded as part of subsequent data cleaning processes. Note that all descriptive and inferential results, including model comparison results, are in relation to the *final* group of 625 white respondents post data preparation and cleaning.

Finally, the results of Chi-square tests of independence, summarized in Table 1, confirm that the TGD people of color and the white TGD subgroups were similar in terms of the distribution of transmen, transwomen, and nonbinary participants, and similar also in terms of the extent to which they had come out to family, friends and colleagues. However, these tests also suggest small but statistically significant disparities in terms of income, with a greater proportion of white participants in the $10,000–$50,000 income bracket, and a greater proportion of people of color in the $51,000–$100,000 income bracket.

Materials

The study was in the form of an online survey hosted by the Qualtrics™ survey engine. Demographic questions were followed by a question about assigned sex at birth and an expandable text box used by participants to describe their gender identity. Participants also responded to questions about their annual income, race/ethnicity, country of birth, and country of residence. They then completed the following measures:

The *Post-Traumatic Growth Inventory* (PTGI-X; Tedeschi et al., 2017) is a 25-item self-report questionnaire that measures growth regarding personal strength, relating to others, new possibilities, appreciation of life, and spiritual/existential change. Items are measured on a 6-point Likert-scale (0 = *I did not experience this change*, 5 = *I experienced this change to a very great degree*) with higher scores indicating greater growth. The PTGI-X distinguishes between growth experienced in different aspects of life, namely, growth in terms of relating to others, growth in terms of achieving or appreciating new possibilities in life, growth in personal strength, growth in terms of having a greater appreciation of life, and growth of a spiritual, religious, or existential nature. The measure was originally designed to identify growth in these dimensions following trauma (Tedeschi & Calhoun, 1996), however, the instructions provided in our survey prompted participants to focus on growth in the context of the challenges they had faced as a TGD person. The PTGI-X has been validated for use in cross-cultural samples (Tedeschi et al., 2017) and in the present study each of its subscales (with all items retained) also possessed adequate internal reliability (relating to others, α = .85; new possibilities, α = .80; personal strength, α = .84; appreciation of life, α = .70; and spiritual/existential growth, α = .83)

The Personal Wellbeing Index – Adult (PWI-A; Cummins et al., 2003) is an 8-item measure of perceived quality of life on overall life as a whole, standard of living, health, life achievement, personal relationships, personal safety, community connectedness and future security. Responses are measured on an 11-point scale (0 = *Dissatisfied*, 10 = *Totally Satisfied*) with higher scores indicting greater subjective quality of life. The PWI has good psychometric properties across cultures and subgroups including TGD samples (e.g., Cummins et al., 2003). In the present study, we focused only on the responses to the overall/life-as-a-whole item.

The Depression, Anxiety, Stress Scale (DASS-21; Antony et al., 1998) is a shortened version 21-item self-report scale that measures negative mood in terms of depression, anxiety, and stress. Responses are measured on a 4-point Likert scale (1 = *did not apply to me at all*, 4 = *applies to me very much, or most of the time*) with higher scores indicating higher distress. The *DASS-21* has good psychometric properties (Henry & Crawford, 2005) including with TGD samples (Ho & Mussap, 2017), with good validity for construct, convergent, and

discriminant validity, and adequate reliability in the present study ($\alpha = .94$).

Procedure

The study was approved by our university's Human Research Ethics Committee and participation was open to all people aged 18 years or more who identified as non-cisgender. Participants were recruited via TGD support groups and organizations, online forums, trans blogs, posters in trans health clinics, and through snowball sampling. Participation was voluntary with no reimbursement offered. Participants completed the online survey with the measures presented in the order described in the Materials subsection.

Results

Statistical analyses were conducted using IBM SPSS Statistics for Windows, Version 25.0 (IBM Corp, Armonk, NY, USA). Missing items for items used in inferential analyses were fewer than 1% of responses and distributed randomly across measures and cases. These missing items were excluded from variable creation. Variables were computed in accordance with instructions detailed in the Materials subsection (i.e., mean for PTGI-X subscales, sum for DASS-21, with PWI treated as a single item measure). Note that the results of confirmatory factor analyses (see below) resulted in the exclusion of item 18 ("I have stronger religious faith") from the spiritual/existential subscale of the PTGI-X. Univariate outliers were defined as values $> \pm 3.29$ standard deviations from the mean. These outliers were not removed but adjusted to be equal to the value at ±3.29 standard deviations. This had the effect of retaining the contribution of the data point in question while simultaneously reducing its undue influence on subsequent inferential analyses (Tabachnick & Fidell, 2007). Three cases—all white respondents—were identified as multivariate outliers (Mahalanobis's distance $p < .001$) and replaced with three white respondents chosen randomly from the "surplus" sample (see Participants subsection). Multivariate outliers were again checked with these three replacements and no cases were found to be problematic. Note that all descriptive and inferential analyses, including participant characteristics provided in Table 1, refer to this final group of participants, with the three replacement cases included. Summary descriptive statistics provided in Table 2 confirm that final variables (and their subscales) possessed adequate Cronbach's alphas and did not deviate significantly from normality.

Model evaluation and modification

To use the PTGI-X in inferential analyses we first needed to confirm the factorial structure of the measure with TGD participants, the equivalence of each subscale's composition (metric invariance), and the equivalence of each item's relative contribution to each subscale score (scalar invariance) across the TGD people of color and white TGD subgroups.

A confirmatory factor analysis (CFA) in AMOS™ Version 25.0 (Amos Development Corporation, Meadville, PA, USA) using maximum likelihood estimation was conducted of the five-factor model hypothesized by Tedeschi et al. (2017) with all participants included and with no equality constraints imposed. The results for this "hypothesized" model (Model 1) are summarized in Table 3 and show inadequate fit against a number of criteria: CMIN(df) $p > .05$; CMIN/df < 5; root mean square error of approximation (RMSEA $< .06$); standardized root mean square residual (SRMR $< .08$); comparative fit index (CFI $> .95$); and Tucker-Lewis Index (TLI $> .95$) (Byrne, 2010; Hu & Bentler, 1999).

Model 2.1 (Table 3) shows fit indices for the hypothesized model following the removal of one item with a poor factor loading (<.5) (item 18: "I have stronger religious faith") from the spiritual/existential factor. Removal of this item resulted in significantly improved fit (as indicated by a difference-of-Chi test). We suggest that this item was anomalous because of the problematic relationship that TGD people can have with formal religion, religious organizations, and religious individuals (see discussion section and recent review by Campbell et al., 2019). As shown in Models 2.2 and 2.3, two pairs of items with overlapping content and elevated modification indices

Table 2. Descriptive statistics and bivariate correlations ($N = 625{,}125$).

											People of color				
		1	2	3	4	5	6	7	min	max	α	M	SD	Skew	Kurtosis
1	Relating to others	–	.75**	.65**	.56**	.53**	.45**	−.13	0	5	.86	2.83	1.29	−.66	−1.56
2	New possibilities	.69**	–	.72**	.75**	.68**	.43**	−.21*	0	5	.78	2.97	1.16	−.63	−1.87
3	Personal strength	.67**	.76**	–	.72**	.63**	.51**	−.26**	0	5	.88	3.07	1.46	−2.1	−1.73
4	Appreciation of life	.64**	.81**	.72**	–	.68**	.45**	−.28**	0	5	.65	2.83	1.29	−1.15	−1.46
5	Spiritual/Existential	.57**	.58**	.57**	.58**	–	.46**	−.24**	0	5	.87	1.93	1.56	1.82	−2.47
6	PWI	.19**	.23**	.28**	.25**	.20**	–	−.46**	0	10	–	5.32	2.51	−2.88	−1.02
7	DASS-21	.01	−.05	−.10*	−.10*	−.07	−.53**	–	0	63	.95	28.24	15.38	1.77	−1.58
White	*Cronbach's α*	.86	.76	.83	.71	.82	–	.94							
	Mean	2.55	2.74	2.63	2.63	1.64	5.49	25.6							
	Standard deviation	1.27	1.15	1.34	1.29	1.36	2.1	13.69							
	Skew	−1.42	−3	−2.2	−1.59	6.13	−5.39	4.28							
	Kurtosis	−4.59	−2.58	−4.05	−4.09	−3.02	−1.35	−2.38							

Notes: Correlations for the TGD people of color subgroup are in the top-right diagonal, those for the White subgroup are in the bottom-left diagonal; min and max values are the same for both subgroups; $^{*}p < .05$; $^{**}p < .01$.

(MIs) (>80; Hu & Bentler, 1999) were identified and error covariances introduced between them. These were items 22 and 23 ("I have a greater sense of harmony with the world" and "I feel more connected with all of existence"; MI = 115.20), and items 15 and 16 ("I have more compassion for others" and "I put more effort into my relationships"; MI = 94.8). Adding each of these error covariances significantly improved model fit (see Chi-square change results in Table 3 for Models 2.2 and 2.3, respectively).

The final modified model (Model 3 in Table 3), when applied simultaneously to the two TGD subgroups—people of color and white—unconstrained, possessed improved fit compared to the original model and yielded fit indices comparable to those obtained by the original developers of the PTGI-X (see Table 5 of Tedeschi et al., 2017). This model is depicted in Figure 1 along with estimates provided separately for the two TGD subgroups. The similarity of these estimates, particularly the fact that the same items loaded significantly for both subgroups, supports basic configural invariance of the model as a function of race (Putnick & Bornstein, 2016). With the exception of the new possibilities factor, the model also demonstrated convergent validity in terms of possessing composite reliabilities (CR) greater than .6 and average variance explained (AVE) greater than .5 (Fornell & Larcker, 1981). This is comparable to the internal consistency data obtained with non-TGD samples (cf. Tedeschi et al., 2017). However, discriminant validity of the modified model was problematic for both subgroups, with numerous instances of potential multicollinearity between factors ($r >$ .85). Because the original paper describing the development of the PTGI-X did not include information relevant to discriminant validity, we are not in position to comment on whether our modified model is discrepant in relation to non-TGD samples in this regard. However, an earlier version of the PTGI (i.e., sans the spiritual/existential factor) produced correlations between factors typically below .5 (Tedeschi & Calhoun, 1996).

Measurement invariance between TGD subgroups

Measurement invariance of the final model was tested in accordance with recommendations by Putnick and Bornstein (2016) and using reporting conventions recommended by Byrne (2004), with the final modified model (Model 3) serving as the "baseline" model against which all subsequent tests of measurement invariance would be compared.

Due to dissimilar sample sizes between our subgroups these tests were conducted with the smaller subgroup (people of color, $N = 125$) tested against five non-overlapping subsamples of the larger subgroup (white, $N = 5 \times 125$). These subsamples were created by sorting the white respondents chronologically (in terms of survey completion date), and selecting every fifth participant to be in the same subsample (i.e., subsample #1 consisted of participants 1, 6, 11, etc., subsample #2 consisted of participants 2, 7, 12, etc.). Previous subsampling methods applied to structural equation modeling have recommended creating random subsamples and taking arithmetic

Table 3. Summary of CFA results for model fits and model comparison tests.

Model number and description	Groups #	Comparison	CMIN(df)	CMIN/df	RMSEA [±CI]	SRMR	CFI	TLI	ΔCMIN	Δdf	sig
1 Hypothesized model	All		1783.51(265)	6.73	.087[.08; .09]	.057	.84	.82			
Original hypothesized model with all items included (no modifications); all parameters unconstrained; all participants included											
2 Model modifications	All										
2.1 Hypothesized model (model 1)		Model 1	1473.87*(242)	6.09	.082[.08;09]	.054	.87	.85	309.64	23	$p<.00001$
with Item 18 (loading=.33) removed		Model 2a	1259.14*(241)	5.23	.075[.07;.08]	.055	.89	.87	214.73	1	$p<.00001$
2.2 Error covariance added between		Model 2b	1158.46*(240)	4.83	.071[.07;.08]	.055	.90	.89	100.68	1	$p<.00001$
items 22-23 (MI = 115.2).											
2.3 Error covariance added between items 15-16 (MI = 94.8).											
3 Final baseline model	POC + all white		1489.84*(480)	3.10	.053[.05;.06]	.060	.89	.88			
Original model with all items included (no modifications); all parameters unconstrained; POC and white subgroups tested simultaneously											
3.1 – 3.5 Baseline models (one per	POC v #1		924.60*(480)	1.93	.061[.06;.07]	.085	.87	.85			
subsample)	POC v #2		792.30*(480)	1.65	.051[.05;.06]	.069	.90	.89			
Six versions of Model 2 with the POC	POC v #3		904.21*(480)	1.88	.060[.05;.07]	.082	.88	.86			
group paired with each of the five	POC v #4		914.54*(480)	1.91	.061[.06;.07]	.078	.86	.84			
white subsamples in turn; all	POC v #5		906.29*(480)	1.89	.060[.05;.07]	.081	.87	.85			
parameters unconstrained; POC and white subgroups tested simultaneously	Average (±SE)		888.29 ± 24.29	1.85±.05	.06±.00	.08±.01	.88±.01	.86±.01			
4.1 – 4.5 Metric invariance tests	POC v #1	Model 3.1	945.50*(499)	1.90	.060[.05;.07]	.082	.87	.86	20.09	19	$p=.34$, ns
Each of the six versions of Model 4	POC v #2	Model 3.2	811.98*(499)	1.63	.050[.04;.06]	.073	.90	.89	19.68	19	$p=.41$, ns
with factor loadings constrained to	POC v #3	Model 3.3	922.99*(499)	1.85	.059[.05;.06]	.083	.88	.86	18.78	19	$p=.47$, ns
be equal between the POC group	POC v #4	Model 3.4	930.61*(499)	1.87	.059[.05;.06]	.075	.86	.95	16.07	19	$p=.65$, ns
and the corresponding white	POC v #5	Model 3.5	920.56*(499)	1.85	.058[.05;.06]	.079	.87	.86	14.27	19	$p=.77$, ns
subsample; POC and white subgroups tested simultaneously	Average (±SE)		906.33 ± 23.99	1.82±.05	.06±.00	.08±.00	.88±.01	.88±.02	17.94	19	$p=.53$, ns
5.1 – 5.5 Scalar invariance tests	POC v #1	Model 4.1	966.15*(523)	1.85	.058[.05;.06]	.081	.87	.86	20.65	24	$p=.66$, ns
Each of the six versions of Model 4	POC v #2	Model 4.2	838.56*(523)	1.60	.049[.04;.06]	.073	.90	.89	26.58	24	$p=.32$, ns
with factor loadings and intercepts	POC v #3	Model 4.3	957.53*(523)	1.83	.058[.05;.06]	.083	.87	.87	34.54	24	$p=.08$, ns
constrained to be equal between	POC v #4	Model 4.4	961.96*(523)	1.84	.058[.05;.06]	.075	.86	.85	31.35	24	$p=.14$, ns
the POC group and the	POC v #5	Model 4.5	952.42*(523)	1.82	.058[.05;.06]	.079	.87	.86	31.86	24	$p=.13$, ns
corresponding white subsample; POC and white subgroups tested simultaneously	Average (±SE)		935.32 ± 24.30	1.79±.05	.06±.00	.08±.00	.87±.01	.87±.01	29.00	24	$p=.22$, ns

Notes: POC = people of color; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual; CFI = comparative fit index; TLI = Tucker-Lewis Index; MI = modification indices; CI= ±90% confidence intervals; Δ = difference score; $^*p < .001$; refer to Figure 1 for item names.

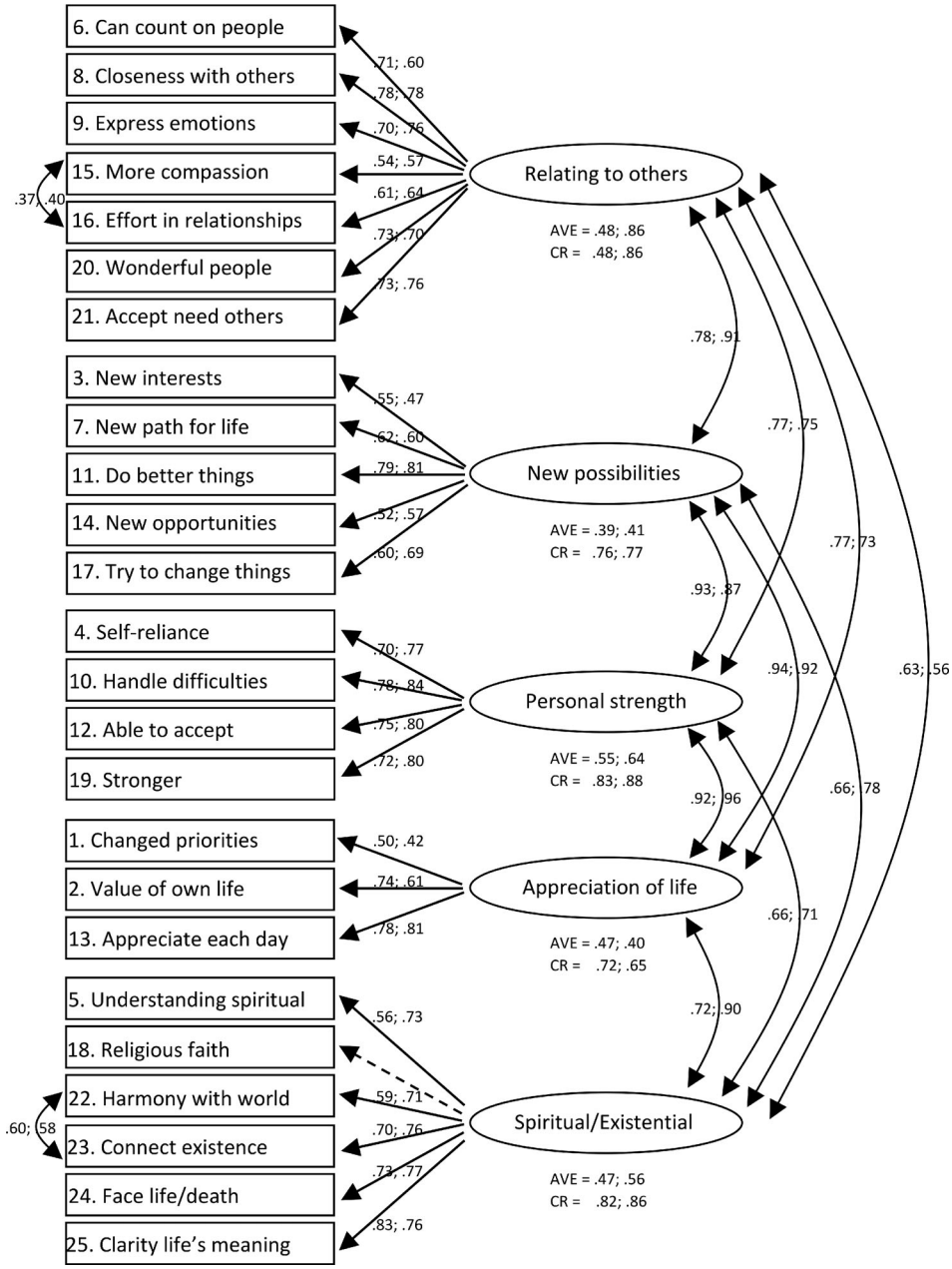

Figure 1. Modified Posttraumatic Growth Inventory-X model.
Notes: The model is the final modified model (Model 3 in Table 3; see Table 2 for fit indices); all estimates are standardized and presented in left-to-right order (white; people of color); AVE = average variance example; CR = composite reliability; all estimates are significant at .01.

means of results obtained across the subsamples (Yoon & Lai, 2018). However, we reasoned that because our data collection had taken place over the course of an entire year, ensuring that each subsample contained respondents from across this timeframe would reduce the risk of confounding subsample membership with some large-scale event relevant to TGD people (e.g., birth certificate reform in the participant's country of residence).

Table 3 shows the fit indices of the modified five-factor model applied to the TGD people of color and each of the five white subsamples to create five sets of baseline model fits (Models 3.1–3.5) along with averages of these indices across subsamples. To test for metric invariance, each baseline model was compared to the same model but with factor loadings constrained between the subgroups (Models 4.1–4.5). The individual and averaged results indicate that

Table 4. Summary inferential statistics for group comparisons.

Comparison	Analysis	DV	Statistic	ΔM	*p*	Effect size*
Trans and gender diverse (N = 750) v US (N = 250) participants	Single-sample t-tests between the combined TGD sample v the mean of the US sample	Relating to others	*t*(749)=8.03	.38	.000	.29
		New possibilities	*t*(749)=26.16	1.10	.000	.40
		Personal strength	*t*(749)=8.29	.42	.000	.30
		Appreciation of life	*t*(749)=.86	.04	.389	.03
		Spiritual/ Existential Change	*t*(749)=.75	.14	.003	.11
People of color (N = 125) v white (N = 625) trans and gender diverse participants	MANOVA of PTGI-X subscale by TGD subgroup (people of color v white)	Relating to others	*F*(1,748)=5.21	.23	.023	.01
		New possibilities	*F*(1,748)=3.98	.44	.046	.01
		Personal strength	*F*(1,748)=10.58	.20	.001	.01
		Appreciation of life	*F*(1,748)=2.64	.29	.104	.00
		Spiritual/ Existential Change	*F*(1,748)=4.40	.17	.036	.01
	Independent groups t-test	PWI	*t*(748)=.74	.18	.458	.07
	Independent groups t-test	DASS-21	*t*(748)=-1.93	.28	.054	.18

Notes: US participants were sourced from Tedeschi et al. (2017); ΔM = group mean differences; t-test on PWI is with unequal variances assumed; *effect sizes are reported as Cohen's *d* values for t-tests and η^2_p for MANOVA.

model fits were not adversely affected (at $p = .05$) by imposing this constraint, suggesting that the factor loadings were sufficiently similar between the subgroups. To test for scalar invariance, each baseline model was next compared to a corresponding model with both factor loadings and factor intercepts constrained between the subgroups (Models 5.1–5.5). Again, individual and averaged results indicate no significant deterioration of model fit (at $p = .05$), suggesting that factor intercepts were also sufficiently similar between the subgroups.

These results supported the use of the PTGI-X with gender-nonconforming participants, the creation of PTGI-X subscales from their responses to the PTGI-X, and the use of average scores on these subscales to compare the TGD subgroups.

Single and multiple minority identities compared

The results of group comparisons are summarized in Table 4. This table includes the results of single sample t-tests comparing PTGI-X subscale scores for our TGD participants (subgroups combined) against means of a sample of 250 US college students who had reported experiencing a potentially traumatic event in the previous six months (see Table 1 of Tedeschi et al., 2017). Although the gender identity of the US participants was not ascertained, it can be assumed that the majority were cisgender. The results of these t-tests indicate substantially greater growth for TGD participants in terms of relating to others, new possibilities, personal strength, spiritual/existential change (all at $p < .05$). These results support the hypothesis (H1) that TGD people experience growth from adversity at levels that are comparable to or indeed in excess of cis-gender people who have recently experienced a serious adverse event.

The results of independent groups t-tests between our TGD subgroups, also shown in Table 4, revealed no significant difference between TGD people of color and white TGD participants in terms of either personal well-being or negative mood. Thus, these results do not support the hypothesis (H2) that TGD people of color experience poorer outcomes than white TGD people.

However, the results of a MANOVA of PTGI-X subscale by subgroup (Table 4) revealed a significant multivariate effect, $F(5,744) = 2.44$, $p < .05$, $\eta^2_p = .02$, with univariate effects showing significantly greater growth from adversity reported by TGD people of color compared to white TGD people in terms of relating to others, personal strength, and spiritual/existential change. These results support the hypothesis (H3) that the TGD people of color experience greater growth from adversity.

We repeated these analyses with the inclusion of nine Jewish participants in the people of color TGD subgroup (in the Participants section we explain why they were not included in initial analyses) and confirmed that their inclusion had no impact on the size, direction, or statistical significance of the between-groups effects described above with the exception of one: the difference in growth due to relating to others went from significant (at $p = .023$) to marginally non-significant ($p = .064$).

Growth from adversity and positive outcomes in multiple minority TGD people

Table 2 includes Pearson bivariate correlations between the PTGI-X subscales and the outcome measures—personal well-being and negative mood. These correlations were in the expected direction for both TGD subgroups, with more growth generally associated with significantly more personal well-being and lower negative mood. This pattern of correlations supports the hypothesis (H4) that the self-perceived growth reported by our participants has functional significance. More importantly, and in support of the hypothesis that growth is more valuable for people holding intersecting identities (H5), these correlations were consistently larger in magnitude for TGD people of color. To test this formally we compared r values using Fisher's r-to-z transformations. Z difference scores confirmed that growth in terms of relating to others, new possibilities, personal strength, appreciation of life, and spiritual/existential change was more strongly related to personal well-being for TGD people of color compared to white TGD people ($z = 2.95$, 2.28, 2.78, 2.32, 2.98, respectively, all at $p < .05$ two-tailed), and that growth in terms of appreciation of life was more strongly related to reduced negative mood for TGD people of color compared to white TGD people ($z = -1.89$, $p < .05$ two-tailed).

To examine the nature of these effects in more detail a series of two-step hierarchical regressions were conducted in which each outcome measure (personal well-being and negative mood) was regressed on each PTGI-X subscale and race (dummy-coded with people of color coded positively) in step one of the regression (these constituted the main effects of each analysis), with the product of PTGI-X subscale and race introduced in step two of the regression (this constituted the interaction effect of each analysis). The results, summarized in Table 5, show that race significantly and positively moderated the relationship between growth and personal well-being for each of the five PTGI-X subscales, and negatively moderated the relationship between growth and negative mood but for only one of the five subscales—appreciation of life.

The graphical inserts in the table help to visualize these effects. Due to the very similar results obtained for the PTGI-X subscales in relation to personal well-being, a composite version of PTGI-X was created and used in the insert. This composite included all items, sans item #18 (Cronbach's alpha of .94). The graph of PWI scores shows that although both subgroups exhibited a positive relationship between growth and personal well-being, the relationship was more pronounced for TGD people of color. This moderation effect took the form of a crossed interaction in which people of color who experienced high levels of growth reported higher levels of personal well-being than white participants, whereas those who experienced low levels of growth reported lower personal well-being than white participants. In terms of negative mood, the graph reveals an uncrossed interaction. Although both subgroups reported less negative mood with greater appreciation of life, the absence of this aspect of growth had a greater impact on negative mood for people of color compared to white participants. However, as noted earlier, this effect was limited to only one of the five PTGI-X subscales.

Again, we repeated analyses with the inclusion of nine Jewish participants in the people of color TGD subgroup (see Participants section for rationale) and confirmed their inclusion had no impact on the size, direction, or statistical significance of the between-groups effects described above.

Discussion

Our study examined whether the adversity experienced by gender nonconforming people can

Table 5. Results of moderation analyses via two-step hierarchical regression.

	Predictor	PWI					DASS-21				
		R^2	ΔR^2	β	t	r	R^2	ΔR^2	β	t	r
Step 1	Relating to others	.06**	.02**	.24	6.67**	.23**	.01	0	−.02	−.50	−.01
	Race			−.05	−1.41	−.03			.07	1.96	.07
Step 2	Relating to others			.35	7.34**	.23**			−.07	−1.39	−.01
	Race			−.07	−1.92	−.03			.08	2.17*	.07
	Relating to others X Race			.16	3.48**	−.07			−.08	−1.54	−.03
Step 1	New possibilities	.07**	.01**	.27	7.56**	.26**	.01*	0	−.08	−2.22*	−.08*
	Race			−.05	−1.42	−.03			.08	2.09*	.07
Step 2	New possibilities			.35	7.52**	.26**			−.14	−2.88**	−.08*
	Race			−.06	−1.77	−.03			.09	2.31*	.07
	New Possibilities X Race			.13	2.77**	−.11**			−.09	−1.83	.01
Step 1	Personal strength	.11**	.01**	.33	9.56**	.33**	.02*	0	−.13	−3.59**	−.12**
	Race			−.07	−2.01	−.03			.09	2.35*	.07
Step 2	Personal strength			.42	9.47**	.33**			−.18	−3.94**	−.12**
	Race			−.09	−2.57*	−.03			.10	2.66**	.07
	Personal strength X Race			.14	3.08**	−.12**			−.08	−1.80	.03
Step 1	Appreciation of life	.08**	.01**	.29	8.22**	.29**	.02**	.01*	−.13	−3.67**	−.13**
	Race			−.05	−1.36	−.03			.08	2.16*	.07
Step 2	Appreciation of life			.38	8.09**	.29**			−.20	−4.13**	−.13**
	Race			−.06	−1.67	−.03			.09	2.37*	.07
	Appreciation of life X Race			.14	2.91**	−.12**			−.10	−2.09*	.04
Step 1	Spiritual/Existential change	.07**	.01**	.26	7.24**	.25**	.02**	.01	−.10	−2.76**	−.10**
	Race			−.05	−1.42	−.03			.08	2.14*	.07
Step 2	Spiritual/Existential change			.34	7.73**	.25**			−.15	−3.35**	−.10**
	Race			−.06	−1.78	−.03			.09	2.35*	.07
	Spiritual/Existential X Race			.13	3.11**	−.06			−.08	−1.89	.01

Notes: *$p < .05$; **$p < .01$; insert plots significant moderation effects using unstandardized coefficients at the minima and maxima of PTGI-X (the plot shows results for a single-factor composite version of PTGI-X) for Minority and White TGD participants.

lead to psychosocial growth, and whether holding multiple minority statuses can enhance this growth.

Because our measure of growth—the PTGI-X—had not been developed for use with adversity in the form of trans-negativity and gender-based discrimination, and it had not previously been evaluated for use with gender nonconforming populations (Shulman et al., 2017), we commenced by evaluating the psychometric properties of the PTGI-X with our sample. Although our results supported the five-factor structure of the PTGI-X with TGD people, modifications to the model were required to achieve adequate fit. Most importantly, the one item in the measure that refers to religious growth—"I have stronger religious faith"—had to be removed from the spiritual/existential factor due to poor factor loadings. This suggests that religion, and change in religious faith, are not consistently relevant to the spiritual and existential changes that TGD people experience. Religious faith and attitudes to religion and God, both positive and negative, are generally thought not only to help people cope with adversity (Ano & Vasconcelles, 2005; Stratta et al., 2013) but also appear to be conducive to post-traumatic growth in cisgender people (Zeligman et al., 2019). However, in the context of gender non-conformity, religion, religious organizations, and religious individuals can be instrumental in perpetuating trans-negativity and transprejudice (see recent review by Campbell et al., 2019). In light of this, perhaps it is not surprising that spiritual/existential growth, when it occurs in TGD people (e.g., as greater sense of harmony with the world, connectedness with existence, ability to face life/death, and clarity about life's meaning) does not necessarily extend to the religious context.

Given our focus on intersectionality, we also evaluated the comparability of the PTGI-X across TGD people of color and white TGD subgroups. We assessed dimensions of measurement invariance directly relevant to our ability to conduct hypothesis tests and found that our five-factor model of the PTGI-X was invariant between the subgroups. Invariance was established in relation to the general configural properties of the PTGI-X. This confirmed that the five-factor model adequately describes the dimensions of growth experienced by both TGD people of color and white TGD individuals. Invariance was also established in relation to metric invariance, that is, invariance of factor loadings. This confirmed

that each of the five factors of the model loads on each PTGI-X item similarly for both groups, allowing researchers to calculate subscale scores (corresponding to each PTGI-X factor) identically for both groups. Finally, scalar invariance was established in relation to the equivalence of factor intercepts. This confirmed that subscale scores can be directly compared between both groups. In sum, these results provided strong support for the idea that the PTGI-X measure of growth and the five-factor structure proposed by this measure, are applicable to both TGD people of color and white TGD individuals.

To our knowledge, ours was the first study to conduct a psychometric evaluation of the PTGI-X with TGD people of color and white and TGD people. The results we obtained are promising for future researchers wishing to evaluate growth from adversity in gender nonconforming people.

Growth from adversity

Having established the psychometric properties of the PTGI-X with our sample we were able to calculate and compare PTGI-X subscale scores. These comparisons were conducted to test the proposition that people who hold multiple minority identities experience unique opportunities for growth.

We confirmed that growth from adversity in TGD participants does occur and is of a magnitude comparable to and in many instances greater than that reported by cisgender people following a recent traumatic event (cf., Tedeschi et al., 2017). Previous researchers have applied minority stress theory (Meyer, 2003) to explain and measure stressors particular to gender nonconforming people (Testa et al., 2015) including how these stressors can be traumatic (House et al., 2011) and impact negatively on their physical and mental health (see review by Reisner et al., 2016; Shipherd et al., 2011). The present results suggest that these stressors, in terms of their ability to stimulate growth, are at least equivalent in magnitude to recent trauma experienced by a cisgender person. In our study we did not survey participants about the reasons why they think they might have grown, and there is very little previous research relevant to this question. But the research that does exist suggests that the unique experiences and struggles of TGD people, along with the satisfaction that can come from surviving the numerous challenges they have faced, can serve as learning opportunities regarding the self, others, and life in general, and can motivate them to explore new possibilities personally and interpersonally (e.g., Maguen et al., 2007; Riggle & Rostosky, 2012).

Consistent with the idea that people with multiple minority identities experience opportunities for growth beyond those provided by single minority statuses in isolation, TGD people of color reported more growth in relation to interpersonal relationships, personal strength, and spiritual/existential growth than white TGD participants. There is growing evidence pointing to the importance of connectedness, particularly with family and community, in the lives of LGB TQI people (e.g., Puckett et al., 2019; Singh, 2013; Singh & McKleroy, 2011). In the TGD context, connectedness can strengthen oppressed identities, reinforce shared values, provide supportive spaces in which one's authentic identity can be developed and expressed safely, enhance compassion for others, and provide numerous practical benefits (Barr et al., 2016; Bockting et al., 2013; Bry et al., 2018; Budge et al., 2013; Chong et al., 2019; Singh et al., 2011).

Intersectional identities and the relevance of growth from adversity

Each of the PTGI-X subscales were positively associated with increased personal well-being and, to a lesser extent, decreased negative mood for our TGD participants. This not only confirmed that the growth from adversity reported was relevant to important outcome measures, it also supported the idea that this growth was functional/real rather than illusory or a product of social desirability (see review by Zoellner & Maercker, 2006). More importantly, the magnitude of these associations was substantially and consistently greater in TGD people of color compared to white TGD people. Specifically, we observed a crossed interaction in which TGD people of color not only benefited more at high levels of growth but were also more adversely

affected by low levels of growth. This supports the idea that intersecting identities are not only characterized by additional discrimination and disadvantage (Richmond et al., 2012), they also provide additional opportunity and motivation for growth.

To understand why, consider that gender and racial discrimination are not one-off isolated events as is the case in a traumatic incident, accident or natural disaster. Rather, they are typically experienced repeatedly and often frequently. They are also diverse in type, source and context, varying in severity from microaggressions through to extreme violence (Burnes & Chen, 2012; Kattari et al., 2015; Mizock & Lundquist, 2016; Reisner et al., 2016). Consistent with the dose-response theory of trauma (Turner & Lloyd, 1995), repeated exposure to adversity has been shown to have a cumulative impact on mental health (Gerber et al., 2018). The more extreme associations, both positive and negative, observed with TGD people of color may thus be due to their more frequent exposure to adversity, adversity that is experienced more severely because it can target their gender identity, their racial identity, and/or their intersecting identity (e.g., Chang & Singh, 2016; Grant et al., 2011; Kattari et al., 2015; Lefevor et al., 2019; Saffin, 2011).

Strengths and limitations

Before concluding, it is worth considering the main limitations of our study. Most obviously, our study relied on subjective, self-report measures of growth from adversity. This is a limitation shared with much of the research in the area—that growth is seldom evaluated against objective criteria or even against subjective criteria provided by an independent party (Engelhard et al., 2015). Furthermore, because we used a cross-sectional research design, correlational analytic techniques, and retrospective reporting, our interpretations are also vulnerable to the possibility of reverse causality or the presence of a "third variable," i.e., a variable that influences both self-perceived growth and the outcome measures of interest and in doing so creates the false impression that growth is relevant to the outcome measures (e.g., Blix et al., 2016; Davis et al., 1998). In this regard, we recommend that future research in the area consider using longitudinal designs where data are obtained at multiple time points.

As explained in our Methods section, the limited sample size of the TGD people of color subgroup prevented us from conducting analyses on specific ethnic minorities. Although we argue that it is more meaningful and less problematic to focus on race in the context of minority/majority status rather than ethnic identity per se (Parent et al., 2013), our inability to examine ethnic differences in our observed effects is a limitation nonetheless. Our sample size also prevented us from examining growth from adversity in TGD people of color living in non-Western countries.

In relation to the terminology employed in our paper, we acknowledge that our use of the term "minority" in reference to race may be problematic particularly in regions where nonwhite people form a numerical majority. We wish to make it clear that when we used the term, we were not referring to it literally but politically, as the injustices from white people toward nonwhite people are important to acknowledge. We also understand that the use of the term "person/people of color" is also potentially problematic and has been challenged by those who would prefer a more personal, ethnicity-specific nomenclature rather than one defined mainly in relation to whiteness.

Finally, in terms of our modeling of the PTGI-X, it is important to note the high correlations we observed between the PTGI-X's factors. At the time of writing this paper, relevant statistics concerning discriminant validity for this measure were not available from the literature, however, previous versions of the measure—pre development of the spiritual/existential subscale (Tedeschi & Calhoun, 1996)—did not appear to suffer from this problem using a cisgender sample. This suggests that our results are peculiar to our methods and/or our sample and not a property of the measure itself. Regardless of the precise cause, the evidence of multicollinearity that we uncovered does call into question the computation and use of the separate PTGI-X subscales with TGD people.

Conclusions

We confirmed the configural, metric, and scalar properties of the five-factor structure of the PTGI-X measure of growth from adversity on TGD people of color and white TGD people. Using this measure, we obtained evidence that the many challenges facing gender nonconforming people can have unexpected benefits by providing them with opportunities for positive change. This growth from adversity was comparable to and in some cases greater than that observed in members of the general population who had experienced a recent traumatic event. We observed that TGD people of color appeared to experience more growth than white TGD participants, suggesting that intersecting identities in the gender nonconforming context provide additional, perhaps even unique, experiences and opportunities for growth. And perhaps most importantly, we found evidence that growth from adversity was more important to the personal well-being and negative mood of TGD people of color. In summary, our results highlighted (i) the potential value of positive, strengths-based approaches to understanding well-being and mental health in TGD people (Riggle et al., 2011), (ii) the importance of studying and supporting TGD people in the context of multiple intersecting identities rather than considering their minority identities in isolation (Roen, 2001), and (iii) the need to stop treating gender nonconforming people as a single homogenous group (Budge et al., 2016; Sánchez & Vilain, 2009).

Note

1. In the Results we explain how we repeated all inferential analyses with the inclusion of these nine participants in the people of colour subgroup and confirm no substantial differences in the pattern of results obtained.

Disclosure statement

The authors have no potential conflict of interest to report.

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